Small Business Innovation Research/Small Business Tech Transfer

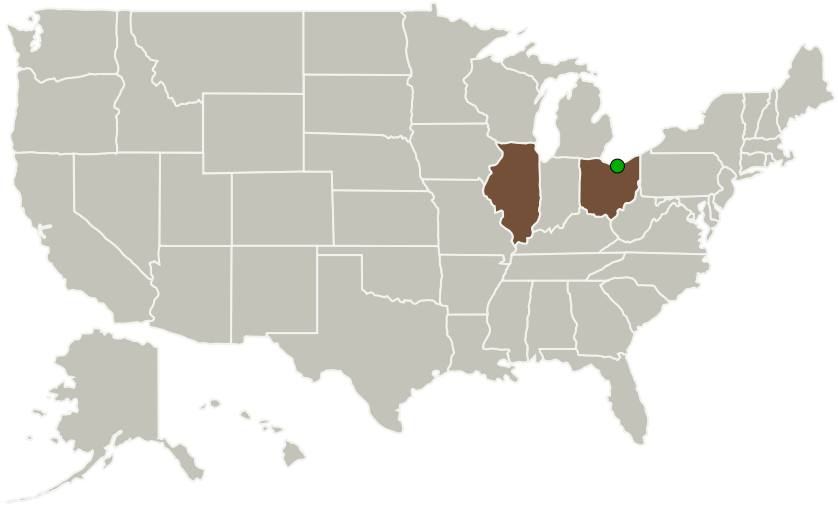
Flexible ELO Solar Cells with Ultra-High Specific Power and Areal Power Density, Phase I

Completed Technology Project (2015 - 2015)

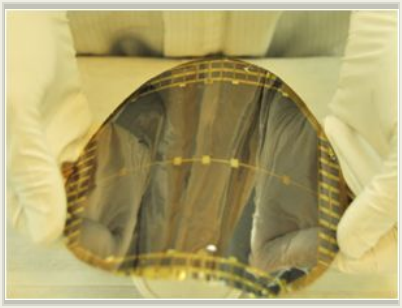
Project Introduction

In the proposed effort, MicroLink Devices develop an ultra-lightweight, high-efficiency, GaAs-based, multi-junction solar cell that will be suitable for use in future platforms requiring very high specific power (>2.0 kW/kg) and very high areal power density (>370 W/m2) such as power generation and conversion for robotic science mission applications, and in particular solar electric propulsion (SEP). In addition to drastically reduced mass the highly flexible nature of our ELO solar cells would allow for novel compact lightweight array designs that take full advantage of the unique properties of ELO solar cells. We will achieve this result by reducing the metal content of MicroLink's current inverted metamorphic (IMM), epitaxial lift-off (ELO) solar cell and replacing the metal with robust, low-density, space qualified Kapton® that will retain the flexibility and durability of ELO solar cell at a fraction of its present weight.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
MicroLink Devices, Inc.	Lead Organization	Industry Minority-Owned Business	Niles, Illinois
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations	
Illinois	Ohio

Project Transitions

June 2015: Project Start

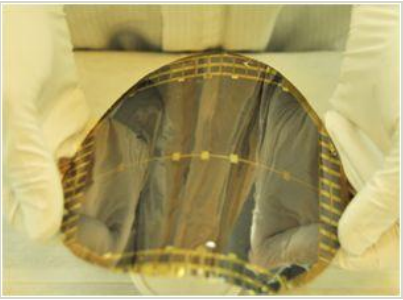
December 2015: Closed out

Closeout Summary: Flexible ELO Solar Cells with Ultra-High Specific Power an d Areal Power Density, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139012)*

Images



Briefing Chart Image
Flexible ELO Solar Cells with Ultra-High Specific Power and Areal Power Density, Phase I
(https://techport.nasa.gov/image/128310)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
MicroLink Devices, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

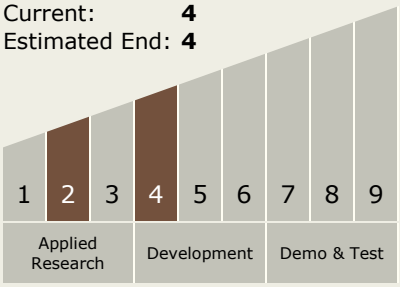
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Christopher Stender

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System